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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,593	09/19/2003	Brian B. Ginther	DKT03009	8542

42595 7590 05/06/2005

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EXAMINER	
ROYAL, PAUL	

ART UNIT	PAPER NUMBER
3611	

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/666,593	GINTHER ET AL.	
	Examiner	Art Unit	
	Paul Royal	3611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/03/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 01/24/05 has been entered.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 02/03/05 has been considered by the examiner.

Drawings

The drawings were received on 01/24/05. These drawings are acceptable. It is noted the new drawing of Figure 2 does not contain element 140, which was in the originally filed drawings, however as this element is not in the disclosure no action is required.

Response to Arguments

3. Applicant's arguments, with respect to the amended claim(s) 1-20 have been fully considered and are persuasive and that the previous rejection will not meet the amended claims. However, a new ground(s) of rejection is made in view of applicant's amendment wherein the invention, as amended, includes a rear axle having an input adapted to receive drive torque and drive a pair of independently operable clutches adapted to drive a respective one of a pair of rear axles.

4. In response to applicant's argument that Raad et al. is not relevant art where Radd et al. is directed to controlling steering assist levels under a variety of operating conditions and the instant invention is directed to controlling the application of torque to the rear wheels of a front wheel drive vehicle to improve vehicle handling characteristics by addressing understeer and oversteer, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

5. Further, with respect to the Radd et al. reference, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Note, Radd et al. is directed to providing steering control, inter alia, by modifying the control signals into PWM and PID feedback control signals. More specifically, Raad et al. teaches converting command signals of the actuator (32) into PWM and PID signals to generate more accurate output signals

which, in turn, provides accurate steering assist levels under a wide variety of system operating conditions. Generally speaking, Raad et al. teaches applying PWM and PID control techniques in vehicle steering systems to obtain accurate steering assist.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4, 9-12, 13-15 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joslin et al. (US 6,327,935) in view of Imamura et al. (5,893,896).

Joslin et al. teaches a dual clutch rear axle which controls yaw in a motor vehicle comprising, in combination:

a rear axle (36) having an input (70) adapted to receive drive torque and drive a pair of independently operable clutches (120A, 120B) adapted to drive a respective one of a pair of rear axles (38);

wherein each of the pair of clutches includes an electromechanical operator (192) and a ball ramp operator (168);

a plurality of speed sensors (2, 54, 56 and 58) for sensing speeds of a plurality of tire and wheel assemblies (40);

a microprocessor (50) adapted to received signals from said sensor's and provide first and second independent signals for actuating said pair of clutches (120A, 120B);

a first driveline including a transaxle (14), a pair of front axles (26), a pair of front tire and wheel assemblies (28) and driving a rear propshaft (32);

wherein the microprocessor arbitrates between the outputs of traction controllers and a dynamics controller, see column 7, line 10 – column 9, line 29, where the microprocessor is understood to provide controller sections directed to traction control (SLIP/traction functions) and directed to dynamics control (YAW/attitude functions).

Joslin et al. does not teach the specific use of a steering angle sensor, a lateral acceleration sensor, a yaw rate sensor and the microprocessor including means for detecting left and right oversteer and left and right understeer of the vehicle, and sensing the throttle position.

Imamura et al. teaches a vehicle control including a braking system employing a steering angle sensor (5), a lateral acceleration sensor (7), and a yaw rate sensor (6), and the microprocessor (8) including means (see column 3, lines 22-28) for detecting left and right oversteer and left and right understeer of the vehicle, and sensing the throttle position (column 6, lines 44-60), to provide a less complex, lower cost, and more reliable vehicle attitude stability control.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the controls of Joslin et al. to utilize the vehicle attitude and stability

sensing components of Imamura et al. including a the steering angle sensor, a lateral acceleration sensor, and a yaw rate sensor and a microprocessor having means for detecting left and right oversteer and left and right understeer of said vehicle, and sensing the throttle position, to provide a less complex, lower cost, and more reliable vehicle attitude stability control.

Note claims 9-12, 14 and 18-19 are taught in the usage of the invention of Joslin et al. in view of Imamura et al. above.

7. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joslin et al. and Imamura et al., as applied to claim 1, in further view of Raad et al. (5,029,660).

Joslin et al. and Imamura et al., as applied to claim 1, teaches the claimed limitations except wherein said microprocessor includes a PWM driver circuit adapted to drive electromagnetic operators in said clutches, and wherein the microprocessor includes a proportional integral derivative controller.

Raad et al. teaches a steering control system and method wherein the microprocessor (36) includes a PWM driver circuit (56) adaptable to drive electromagnetic operators in clutches, see column 4, lines 19-22 where Raad et al. teaches using PWM signals to control the coil of a solenoid (32), and wherein the microprocessor (36) includes a proportional integral derivative controller (78), to accurately control steering assist levels under a wide variety of system operating conditions.

It would have been obvious to one of ordinary skill at the time of the invention to modify the apparatus for controlling yaw in a motor vehicle of Joslin et al. and Imamura et al., as applied to claim 1, to include a steering control system and method wherein the microprocessor includes a PWM driver circuit adaptable to drive electromagnetic operators in clutches, and wherein the microprocessor includes a proportional integral derivative controller, as taught by Raad et al., to accurately control steering assist levels under a wide variety of system operating conditions.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joslin et al. and Imamura et al., as applied to claim 1, in view of Karnopp et al. (US 4,491,097).

Joslin et al. and Imamura et al., as applied to claim 1, teach the claimed limitations except wherein the steering angle sensor senses rotation of a steering column of the vehicle.

Karnopp et al. teaches a steering control mechanism and method which controls vehicle steering stability, inter alia, by measuring and determining vehicle yaw rates and includes wherein the steering angle sensor (25) senses rotation of a steering column (16) of the vehicle to maintain stability of the vehicle.

It would have been obvious to one of ordinary skill at the time of the invention to modify the apparatus for controlling yaw in a motor vehicle of Joslin et al. and Imamura et al., as applied to claim 1, to include wherein the steering angle sensor senses rotation of a steering column of the vehicle, as taught by Karnopp et al. to maintain stability of the vehicle.

9. Claims and 7, 11, 12, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joslin et al. and Imamura et al., as applied to claim 1 and claim 9 respectively, in further view of Sano (US 5,842,754).

Joslin et al. and Imamura et al., as applied to claim 1, claim 9, and claim 15 respectively, teach the claimed limitations except wherein the microprocessor computes a yaw error rate signal and a yaw acceleration value.

Sano teaches vehicle turn control apparatus which includes wherein the microprocessor computes a yaw rate error signal ($\Delta\gamma$, see column 15, lines 26-32) and a yaw acceleration value (yaw moment, see column 6, lines 18-32) to provide smooth yaw control.

It would have been obvious to one of ordinary skill at the time of the invention to modify the apparatus for controlling yaw in a motor vehicle of Joslin et al. and Imamura et al., as applied to claim 1, claim 9, and claim 15 respectively, to include wherein the microprocessor computes a yaw error rate signal and a yaw acceleration value, as taught by Sano, to provide smooth yaw control.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joslin et al. and Imamura et al., and Sano, as applied to claim 16, in further view of Raad et al. (5,029,660).

Joslin et al. and Imamura et al., and Sano, as applied to claim 16, teach the claimed invention except utilizing a proportional integral derivative controller to correct the yaw rate error signal.

Raad et al. teaches a steering control system and method wherein the microprocessor (36) includes a proportional integral derivative controller (78) to correct error signals to accurately control steering assist levels under a wide variety of system operating conditions.

It would have been obvious to one of ordinary skill at the time of the invention to modify the apparatus for controlling yaw in a motor vehicle of Joslin et al., Imamura et al., and Sano, as applied to claim 16, to include wherein the microprocessor includes a proportional integral derivative controller to correct yaw rate error signals to accurately control steering assist levels under a wide variety of system operating conditions.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul Royal whose telephone number is 571-272-6652. The examiner can normally be reached on 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lesley D. Morris can be reached on 571-272-6651. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Paul Royal
Examiner
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4/25/05

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5/2/05